EVALUATION OF ANTI-NOCICEPTIVE ACTIVITY OF METHANOLIC LEAF EXTRACT OF SECURIDACA LONGIPEDUNCULATA FRES (POLYGALACEAE) IN SWISS ALBINO MICE

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ABSTRACT
Pain sensation results from a complex interplay that involves physical perception as well as the emotional reaction to the perception. Securidaca longepedunculata is a semi deciduous shrub or small tree that grows between six to twelve metres high. It has a pale grey, smooth bark with leaves that grow in clusters. This study was designed to evaluate the scientific rationale for the use of Securidaca longepedunculata in the treatment of pain. The anti-nociceptive activity was evaluated by three methods. They include; acetic acid-induced writhing method, formalin-induced pain method and thermally-induced hyperalgesia method. A total of ninety (90) mice were used for this study. Assessment of pain by the acetic acid induced writhing method involved thirty (30) mice that were divided into five groups of six animals each (n=6), and treated as follows; Group one was administered normal saline (10 ml/kg) and served as control, Groups two, three, and four were treated orally with the extract (MLESL) at doses of 200, 400 and 800 mg/kg respectively. Group five was given Piroxicam (20 mg/kg) orally, 0.6% acetic acid (10 ml/kg) was administered sixty minutes later. Pain assessment by the Formalin-induced pain method involved thirty mice (30) that were divided into five groups of six mice each (n=6) as those above and treated. However, group five was administered morphine sulphate (4 mg/kg) instead of piroxicam. Sixty minutes after treatment, 50 µl of freshly prepared 2.5% solution of formalin was injected subcutaneously under the plantar surface of left hind paw of each mouse. Assessment of pain by the thermally induced hyperalgesia method involved thirty mice (30) that were divided into five groups of six mice each (n=6) as those above and treated. However, group five was administered morphine sulphate (4 mg/kg) instead of piroxicam. Sixty minutes after treatment, the mice were then placed on aluminium hot plate kept at temperature of 55±0.5°C for a maximum of twenty seconds. In the first method, number of abdominal constrictions was significantly (P<0.05) decreased in all the extract treated groups in a dose dependent manner when compared to the control (8.83±0.07, 6.60±0.00 and 5.50±0.43 vs 17.33±0.71) respectively. Percentage inhibition of writhes was decreased in the treated groups (49.05, 61.92 and 68.26 %) compared to piroxicam treated (85.57%). In the second method, mean ranks in extract treated (800 mg/kg) and morphine treated groups showed a statistically significant (P<0.05) decrease compared to control in phase I and II, with a significant (P<0.05) decrease observed in extract (400 mg/kg) treated groups. In the third method, there was also a statistically significant (P<0.01) increase in reaction time in the extract treated groups when compared to control. The increase in reaction time increased in the extract treated groups with increased time. In conclusion, the extract possesses anti-nociceptive activity in all the models studied in a dose dependent manner. These findings justify the folkloric claim and provide the scientific rationale for its use in the treatment of pain.

Keywords: Analgesic, Securidaca longipedunculata, piroxicam, anti-nociceptive
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